COMMITTEE ON SCIENCE AND TECHNOLOGY
SUBCOMMITTEE ON TECHNOLOGY AND INNOVATION
REPORT FROM SUBCOMMITTEE MARKUP
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H.R. 3916 – *to provide for the next generation of border and maritime security technologies.*

I. Purpose

The goal of H.R. 3916 is to improve long term planning for research and development at the Department of Homeland Security, especially in the area of border and maritime security technology. The bill authorizes specific border security technology programs, and instructs the Science and Technology Directorate to improve processes for setting research priorities and serving the needs of technology end users.

II. Background and Need for Legislation

The United States has nearly 7,500 miles of land border with Canada and Mexico, over which half a billion people and 2.5 million rail cars pass per year. In addition over 300 U.S. ports receive over 9 million cargo containers each year.

The U.S. Customs and Border Protection (CBP) processes approximately 1.18 million people entering the United States through established ports of entry every day. CBP is also responsible for monitoring between legal entry points along the Northern and Southern borders and intercepting individuals attempting to smuggle contraband or cross the border illegally. In fiscal year 2005, U.S. Border Patrol agents apprehended 1.19 million people attempting to enter the country illegally. In addition, over 26,000 kilograms of marijuana were seized in northern border states in 2005 while over 30,000 kilograms of cocaine, heroine, and methamphetamine were seized within 150 miles of the US/Mexico border in 2006. However, the Government Accountability Office estimates that 1 in 10 serious drug and weapon violators and illegal immigrants pass through airports and land borders undetected.

The Department of Homeland Security invests nearly $1.5 billion annually in research and development projects at the Science and Technology Directorate (DHS S&T) and the Domestic Nuclear Detection Office (DNDO) of which approximately $25 million is directed to border security-specific projects. However, many promising technologies are still not feasible for full implementation along the border because of numerous obstacles including high cost, lack of robustness in harsh conditions, lack of personnel trained to properly use high-tech equipment, and technical problems. DHS S&T has primary responsibility for bringing new technologies to full readiness, with support from other agencies such as the National Institute of Standards and Technology (NIST).

Additionally, many capability gaps identified by end users, including situational

awareness and officer safety, require further basic and applied research to meet existing or anticipated challenges. DHS S&T has several mechanisms to receive advice on R&D priorities, including Integrated Product Teams (IPTs) which bring together stakeholders from other components of DHS, such as CBP, in a regular, formal process to determine short term technology needs. Advice on longer term research priorities comes from a number of sources, including the Homeland Security Science and Technology Advisory Committee (HSSTAC), the Homeland Security Institute (HSI), and the National Academies (NAS).

The Border and Maritime Security Division of the DHS S&T Directorate has ongoing research projects focusing on advanced sensing capabilities, decision-making software tools, non-intrusive search capabilities, and other priorities. Additionally, the U.S. Coast Guard (USCG) and National Institute of Standards and Technology (NIST) carry out some border and maritime security technology research and development (R&D). USCG R&D includes officer protection, boarding, and suspect apprehension tools. NIST has been conducting research on facial recognition technologies and fingerprint analysis, and technical tests of the radio frequency identification (RFID) technology being incorporated into new electronic passports being issued by the State Department to prevent document counterfeiting.

However, border security research accounts for only 3.7 percent of DHS S&T's research budget in fiscal year 2008 (FY 2008) and 4.0 percent in the President's FY 2009 request. Further investment has the potential to significantly improve border security through effective, efficient, and evolving defenses against a wide range of threats including illegal immigration, human trafficking, drug smuggling and terrorism.

III. Subcommittee Actions

On October 22, 2007, Representative Ralph Hall, Ranking Member of the Committee on Science and Technology, for himself and Mr. BARTLETT of Maryland, Mr. BILBRAY, Mr. BROUN of Georgia, Mr. BURGESS, Mr. CONAWAY, Mr. FEENEY, Mr. GINGREY, Mr. GORDON of Tennessee, Mr. INGLIS of South Carolina, Mr. SAM JOHNSON of Texas, Mr. MCCAUL of Texas, Mrs. MYRICK, Mr. NEUGEBAUER, Mr. SENSENBRENNER, Mr. SESSIONS, Mr. SMITH of Nebraska, Mr. WU, Mrs. BIGGERT, and Mr. LAMPSON introduced H.R. 3916, to provide for the next generation of border and maritime security technologies.

The Subcommittee on Technology and Innovation heard testimony in the 110th Congress relevant to the programs authorized in H.R. 3916 at a hearing held November 15, 2007. During that hearing, the Subcommittee heard testimony from Dr. Robert Hooks, the Director of Transition for the Department of Homeland Security's Science and Technology Directorate, Mr. Jeff Self, a Division Chief of the U.S. Border Patrol, and homeland security research and development experts Mr. Ervin Kapos and Dr. Brian Jackson.

The Subcommittee on Technology and Innovation met to consider H.R. 3916 on February 7, 2007 and considered the following amendments to the bill:

1. On behalf of Mr. Mitchell an amendment to add section 7 requiring the Under Secretary for Science and Technology at the Department of Homeland Security to consult with the National Institute of Standards and Technology, U.S. Geological Survey, and Customs and Border Protection to carry out an analysis of the frequency of unintended border crossings and on capability gaps of global positioning system technologies to address such crossings and to make recommendations for research and development needed to address those capabilities. The amendment was agreed to by voice vote.

Mr. Hall moved that the Subcommittee favorably report the bill, H.R. 3916, as amended, to the full Committee. The motion was agreed to by a voice vote.

IV. Summary of Major Provisions of the Bill

H.R. 3916 strengthens control of our nation's borders through research and development of effective, efficient, and evolving defenses. The bill focuses on key long-term technologies that could substantially improve the security of our nation's borders: Unmanned Aerial Vehicles (UAVs), tunnel detection, anti-counterfeit technologies, and Global Positioning System (GPS) technologies.

V. Section by Section Analysis of the Bill, as reported by the Subcommittee

Section 1 is a requirement for the Science and Technology Directorate to clearly define the operational requirements of technologies they are developing for Customs and Border Patrol and other end-users. The language calls for DHS S&T to include operational requirements as part of any agreement, including technology transfer agreements (TTA), to undertake product development activities. This section ensures that both DHS S&T and the DHS customer component that will eventually own and operate the equipment developed have agreed to baseline requirements for operational as well as technical objectives.

Section 2 extends the DHS S&T Advisory Committee, which was last extended through December 31st, 2008 in the SAFE Ports Act of 2006. This section would further extend the Advisory Committee through December 31, 2012 to allow the Secretary ongoing advice from some of our nation's best scientists, engineers, and security specialists.

Section 3 calls for a National Research Council study to provide a roadmap for research activities in the border/maritime division. This section seeks to provide the Research portfolio director with additional material to help make long-term investments in science and technology that will enable the next generation of border and maritime security technologies. The document produced by the NRC would give program managers at DHS a longer-term perspective than is provided through the 1-3 year IPT process.

Section 4 directs the Secretary of DHS to take an active role in safely incorporating unmanned aerial vehicles (UAVs) into the national airspace. Currently, operation of UAVs in the national airspace requires considerable advance planning and approval from the Federal Aviation Administration. This section requires DHS to seek the ability to routinely and safely operate UAVs for border and maritime security missions. Before this technology can be utilized regularly, the safety and effectiveness of "sense and avoid" technologies must be demonstrated. DHS has an excellent opportunity to work collaboratively with the FAA and the Joint Planning and Development Office (JPDO) to collect necessary safety data. To this end, the section also authorizes DHS to take part in pilot projects to obtain whatever data is necessary to make an informed decision about how UAVs can be safely included in the airspace.

Section 5 requires DHS S&T to create a formal research program in the area of tunnel detection, and to coordinate with similar Department of Defense activities. In addition, the section calls for priority to be given to technologies that would allow real-time detection of tunnels and would allow for immediate action by CBP.

Section 6 requires the Under Secretary for DHS S&T and Director of NIST to begin a joint R&D project of anti-counterfeit technologies and standards. Furthermore, the Under Secretary is charged with coordinating research activities with other federal agencies engaged in related research. Finally the section requires a report to Congress on the research programs undertaken under this section one year after enactment.

Section 7 requires the Under Secretary for DHS S&T to consult with the NIST, U.S. Geological Survey, and Customs and Border Protection to carry out an analysis of the frequency of unintended border crossings, the capability of global positioning system technologies to address border security needs, and recommendations for research and development needed to address capabilities for GPS technologies. This section further requires the Under Secretary to work to determine end user requirements for GPS technologies such as cost limitations and operational requirements. Finally, this section requires the Under Secretary to report on the results of the study to Congress one year after enactment.